ATTACHMENT 1

IPSC Carbon Monoxide (CO) Modeling for OFA Project

Modeling Input Summary - Unit 1

Modeling Scenario	Heat Input	Stack Height	Stack Diameter	Stack Flowrate	Exit Velocity	Exhaust Temperature	Maximum 1-Hour CO Emissions	Maximum 8-Hour CO Emissions	Annual Average CO Emissions
	MMBtu/hr	ft	ft	acfm	ft/sec	°F	lb/hr	lb/hr	lb/hr
Full Load Operation - 100%	9,225	712	28.0	3,056,345	82.7	115	5,719.50	2859.75	1319.18
Partial Load Operation - 75%	6,919	712	28.0	2,292,259	62.0	115	4,289.63	2144.81	989.38
Partial Load Operation - 50%	4,613	712	28.0	1,528,173	41.4	115	2,859.75	1429.88	659.59

Modeling Input Summary - Unit 2

Modeling Scenario	Heat Input	Stack Height	Stack Diameter	Stack Flowrate	Exit Velocity	Exhaust Temperature	Maximum 1-Hour CO Emissions	Maximum 8-Hour CO Emissions	Annual Average CO Emissions
	MMBtu/hr	ft	ft	acfm	ft/sec	°F	lb/hr	lb/hr	lb/hr
Full Load Operation - 100%	9,225	712	28.0	3,056,345	82.7	115	5,719.50	2859.75	1319.18
Partial Load Operation - 75%	6,919	712	28.0	2,292,259	62.0	115	4,289.63	2144.81	989.38
Partial Load Operation - 50%	4,613	712	28.0	1,528,173	41.4	115	2,859.75	1429.88	659.59

Modeling Input Summary - Unit 1+2 (metric)

Modeling Scenario		Stack Height	Stack Diameter		Exit Velocity	Exhaust Temperature	Maximum 1-Hour CO Emissions	Maximum 8-Hour CO Emissions	Annual Average CO Emissions
		m	m		m/sec	K	g/s	g/s	g/s
Full Load Operation - 100%		217.0	8.53		25.21	319	1,441.31	720.66	332.43
Partial Load Operation - 75%		217.0	8.53		18.91	319	1,080.99	540.49	249.32
Partial Load Operation - 50%		217.0	8.53		12.61	319	720.66	360.33	166.22

Notes:

1) The maximum 1-hour CO emissions are based on an emission rate of 0.62 lb/MMBtu. This emission rate is based on data collected during the 2003 Overfire Air (OFA) Performance Testing for IPP
2) The maximum 8-hour CO emissions are based on an emission rate of 0.31 lb/MMBtu. This emission rate is based on operating data accounting for unit load changes, boiler fluctuations and
3) The annual average lb/hr CO emissions are based on an average emission rate of 0.143 lb/MMBtu.
4) lb/hr CO = lb/MMBtu CO x MMBtu/hr Heat Input.

5) Stack flow and stack exit velocity were estimated for 75% and 50% load conditions.